SMURFIT-STONE MILL
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
STATEMENT OF WORK

I. INTRODUCTION

This Statement of Work (SOW) presents a framework for conducting a remedial investigation (RI) and the selection of appropriate remedial alternatives to address historic pulp and paper mill impacts for portions of the Anaconda Aluminum Co Columbia Falls Reduction Plant (Site) in Flathead County, Montana.

a. Purpose of the Statement of Work

The purpose of this SOW is to describe, in general terms, the investigation, analysis, and evaluation that will be performed to support the selection of remedial design/remedial action (RD/RA) alternatives to be implemented at the Site.

The Respondent shall conduct the RI/FS in accordance with this SOW and the requirements in the Administrative Settlement Agreement and Order on Consent for Remedial Investigation/Feasibility Study (Settlement Agreement) and consistent with the National Oil and Hazardous Substance Contingency Plan (NCP), 40 CFR Part 300, and "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," EPA 540/G-89/004,OSWER Directive 9355.3-01, October 1988 (EPA's RI/FS Guidance) and any other guidance documents that EPA identifies as relevant to any aspect of conducting an RI/FS for the site. A list of primary guidance documents is included as **Attachment 1** to this SOW.

As specified in the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Section 104(a) (1), as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, EPA will provide oversight of the Respondent's activities throughout the RI/FS. Oversight activities include, but are not limited to, inspecting records, operating logs, and contracts; conducting tests, inspections, and sampling; using a camera, or other documentary-type equipment; verifying the work performed and data collected by the Respondent; and otherwise reviewing the conduct of the Respondent in carrying out the terms of the Settlement Agreement. The Respondent shall support EPA's effort to initiate and conduct oversight activities. EPA's determinations, approvals, and activities as provided for in the Settlement Agreement and in this SOW shall be conducted in consultation with the Montana Department of Environmental Quality (MDEQ) as provided for by CERCLA, the NCP, and applicable guidance.

Performance of the work described in this SOW by the Respondent and EPA's review and approval of documents and activities described in this SOW shall be performed in accordance with the procedures described in the Settlement Agreement. The Respondent shall furnish all necessary personnel, materials, and services needed or incidental to, performing the work described in this SOW, except as otherwise specified in the Settlement Agreement.

II. SITE DESCRIPTION

The Site is an inactive aluminum reduction plant located at 2000 Aluminum Drive in Flathead County, Montana. The facility operated from 1955 through 2009. The facility is locally referred to as Columbia Falls Aluminum Company (CFAC). The main site facility and potline buildings are located approximately two miles northeast of Columbia Falls.

The total area of the property owned by CFAC is approximately 3,200 acres. At this time, it is believed that the historical and observed operations area is approximately 1,000 acres. Current Site use is primarily for minimal plant maintenance activities, wildlife corridors, and local specially permitted hunting. Access to the Site is available via Aluminum Drive and through private land from the north. The closest residence is adjacent to the western CFAC property boundary and is approximately 0.92 miles from the main plant.

The entire Site area is composed of numerous buildings and industrial operating facilities, such as offices, warehouses, mechanical shops, a paste plant, coal tar pitch tanks, pump houses, and the main potline building. Features of the Site include percolation ponds, leachate ponds, sludge ponds, sewage treatment ponds, cathode soaking pits, closed and operational landfills.

Various hazardous chemicals were used or produced on-site, including bleaching chemicals. The use of chlorine for the bleaching of pulp produces chlorinated organic compounds, including dioxins and furans, through the reaction of chlorine with residual lignin.

Potential sources of metals at pulp and paper mills include chemical additives to the pulping process, biocides that contain mercury, and dyes such as cadmium salts. Fly ash from boilers may concentrate naturally occurring metals found in soils.

Source areas on the site confirmed through chemical analysis include four sludge ponds, an emergency spill pond, an exposed soil pile adjacent to landfill A, one wastewater storage pond and a soil land farming area. These were the only areas sampled, as they were determined to have the highest potential for containing hazardous substances, or, in the case of the wastewater storage pond, were determined to be the most at risk in the event of a catastrophic flood. Additional potential sources at the site that have not been sampled include 11 additional wastewater storage ponds, three wastewater treatment aeration basins, two polishing ponds, the industrial core and log loading facilities.

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and the coordinates of the main mill facility are 46° 57' 50.12" north latitude and -114° 11' 58.15" west longitude.

The mill site is located in the northeastern portion of the U.S. Geological Survey (USGS) Primrose Quadrangle Map (USGS 1999). For the SOW, the site boundary is defined by the outside perimeter of the land parcels that constitute the mill property. The legal description of these parcels is provided in Appendix A, and the site boundary is shown in Figures 1 and 2. The

western boundary of the site is the Clark Fork River, with the site having approximately 4 miles of river frontage.

a. Site Characteristics

The site is bordered by the Clark Fork River. There are a number of creeks that drain into the Clark Fork River (Deep, Albert, O'Keefe, Mill, Sixmile, and Ninemile Creeks), as well as the Frenchtown Ponds State Park and portions of the Lolo National Forest. The site lies within the Montana Audubon Clark Fork River- Grass Valley Important Bird Area (Montana Audubon 2009).

The mill lies within the Clark Fork valley and is generally flat, with an elevation range from approximately 3,070 feet near the mill facility to approximately 3,040 feet at the Clark Fork River in the northeast corner of the site. Elevations range from approximately 3,015 feet within the Clark Fork River valley to the northwest, to nearly 5,000 feet in the mountains to both the east and west.

The core industrial footprint of the mill covers approximately 100 acres. Over 900 acres of the site consist of a series of unlined ponds used to store both treated and untreated wastewater effluent from the mill, as well as primary sludge recovered from untreated wastewater. Some ponds initially used to store wastewater were subsequently drained and used for the landfilling of various solid wastes produced at the mill. Approximately half of the ponds currently contain freshwater emergent wetlands. Much of the remaining acreage of the site (approximately 2,000 acres) is used for agricultural purposes, with over 1,200 acres of grasslands for cattle grazing and over 600 acres for alfalfa and grain crops (Montana County Rural Initiatives 2010).

b. Overview of Previous Investigations

Previous environmental investigations at the site appear to have been undertaken, by both the mill and by the Montana Department of Health and Environmental Services (MDHES), primarily to document surface and groundwater quality in an effort to understand and address nutrient loading to the Clark Fork River. For example, beginning in 1983 the MDHES conducted a 2-year study to determine the effects of year-round direct discharge of wastewater from the mill to the Clark Fork River (MDHES 1985). The study documented nutrient, suspended solids, dissolved oxygen, ammonia and metals, and color concentrations in the river; investigated its ecological health (e.g., macro-invertebrate sampling); and identified aesthetics (especially the appearance of foam and colored water), groundwater pollution of the shallow aquifer, and ongoing air quality degradation (especially odor and particulates) as areas of concern.
The 1995 Montana Pollutant Discharge Elimination System (MPDES) discharge permit required the mill to conduct a surface water mixing zone study to delineate the boundary condition of the mixing zone for the direct discharge of wastewater to the Clark Fork River (Hydrometrics 1996). The finding of this study determined that the downstream monitoring station for the Mill (i.e., the Huson sampling station located 6 miles downstream from the site) was a valid location for compliance monitoring and a reasonable location for determination of the mixing zone boundary.

The MPDES permit issued in 2000 required that the mill delineate the groundwater mixing zone boundary condition, defined as the extent of travel of seepage where the groundwater concentration for total dissolved solids (TDS) was greater than or equal to 500 milligrams per liter (mg/L). The permit also required Smurfit-Stone to monitor groundwater wells for the purpose of establishing correlation factors for concentrations of nutrients between newer and older monitoring wells. This investigative work was completed in November 2004 and found that groundwater with TDS concentrations > 500 mg/L was largely contained between Marcure Lane on the north, Mullan Road on the east,, and the Clark Fork River to the west, and that water quality sampling within seven residential wells near the down gradient boundary of the mixing zone showed high quality drinking water with no influence of process wastewater constituents or TDS from the shallow alluvial groundwater system (Hydrometrics and Inskeep 2004).

Environmental compliance monitoring performed at the site included the following (EPA 1993, MDEQ 2010b, Smurfit-Stone 2004):

> Wastewater discharge: nutrients (nitrogen and phosphorus), pH, BOD, total organic carbon (TOC), total suspended solids (TSS), ammonia, color, and toxicity with occasional testing for dioxins;
>
> Non-contact cooling water discharge: oil sheen, foam, temperature, and weekly pH;
>
> Groundwater: nutrients, color, sodium and BOD every 2 months to determine seepage contribution to the Clark Fork River;
>
> In-stream monitoring of the Clark Fork River: color, temperature, dissolved oxygen, and nutrients; and
>
> Air: Total reduced sulfur, opacity, NOx, sulfur dioxide, total suspended particulates, and particulate matter smaller than 10 microns in diameter (PM10).

Site assessments have apparently been performed at six of eight petroleum storage tank locations at the site. The assessments found evidence of leaks at three of the tanks. The remediation of the releases is being overseen by the Petroleum Release Section of the MDEQ.

Previous investigations by the EPA appear to be limited to a chemical safety audit conducted by the Region 8 Technical Assistance Team from February 9 through 12, 1993. The purpose of the audit was to document facility processes, chemical hazards, accidental release prevention practices, and emergency response preparedness and planning (EPA 1993).

The Respondents have an extensive right to request information in EPA's possession that might conceivably be relevant. Therefore, EPA will provide Respondents with compact discs containing the current administrative record for the Site, which includes all known existing information relevant to the RI/FS. As new information becomes available that EPA deems appropriate to carry out the term and conditions of this SOW, this information will also be shared with the Respondents.

c. Conduct Field Visit

Commented [PR1]: I think we should move this section to something other than "site description" as it focuses on work to be performed.

The Respondents shall conduct a field visit of the Site during the project scoping phase to assist in developing a conceptual understanding of sources and areas of contamination as well as potential Site exposure pathways and receptors. The Respondents must include EPA and MDEQ in this field visit and shall provide at least two (2) weeks advanced notice of the proposed date. EPA may also invite other interested agencies to participate in the field visit.

d. Project Scoping Summary

Commented [PR2]: I think we should move this section to something other than "site description" as it focuses on work to be performed.

Based on review of the existing information and the field visit, EPA, in consultation with MDEQ and Respondents, will develop preliminary problem statements, conceptual site models of potential exposure pathways and potential human health and ecological receptors, preliminary remedial action objectives, a preliminary list of potential State and Federal Applicable Relevant and Appropriate Requirements (ARARs), and identify data gaps in a project scoping summary document. This summary document will be used for the site and will be completed within 60 calendar days of the effective date of the Settlement Agreement. EPA will provide in writing to the Respondents a request for extension if additional time is needed to complete this summary document.

III. WORKPLAN

The general scope of work includes provisions for a site investigation designed to provide information necessary to identify areas requiring response actions, and preparation of an RI/FS for determination of appropriate response actions. It is anticipated that there will be multiple investigative phases of the RI. An initial phase may focus on solid media data gaps, groundwater, groundwater/surface water interactions, impoundment embankment stability, wastewater impoundments, stream banks and sediments, other than to identify priority areas whose solid waste are impacting surrounding media. The number of phases required will be determined by EPA, in consultation with MDEQ and the Respondents. The RI/FS will be developed based on information obtained through these site investigations as well as previously obtained information. The site investigation for each phase of an investigation will be conducted in accordance with the Sampling and Analysis Plan (SAP) and will be documented in summary reports.

The project deliverables associated with this SOW include:

- An initial RI/FS Work Plan that describes activities to be conducted as part of the RI/FS at the Site.
- A phase specific SAP, which will include a description of the goals for the specific phase, a list of key personnel and responsibilities, Data Quality Objectives (DQOs), site preparation (i.e, obtaining access agreements and environmental permits, and historical structure management), a Field Sampling Plan, a Quality Assurance Project Plan (QAPP),

a data management plan, contingency planning, agency coordination, and a schedule that describes anticipated timeframe and milestones for completion of the work;
- A phased specific Health and Safety Plan (HASP);
- Summary reports for each phase of investigation;
- A draft and final Remedial Investigation report;
- Development and Screening of Remedial Alternatives;
- Treatability Study (if required by EPA); and
- A draft and final Feasibility Study report.

The Respondents shall notify EPA and MDEQ at least two weeks in advance of field work starting for each phase of the investigation; shall provide a monthly progress report; and participate in meetings at EPA's request. The Respondents shall also notify EPA and MDEQ in writing upon completion of field activities for each phase of the RI.

A summary of each deliverable is provided below. A schedule for preparation of project deliverables and related activities is provided in Section IV.

a. RI/FS Work Plan

The RI/FS Work Plan documents the decisions and evaluations made during scoping and describes the tasks required to conduct the RI/FS. The Work Plan includes a description of the site management strategy, including the remedial action goals, any short- and long-term actions that may be required to address site problems, and the optimum sequence of site actions and investigative activities. In addition, the Work Plan describes the site's physical setting and includes a background summary detailing the history of previous site activities. A comprehensive description of the work to be performed, including the methodologies to be utilized, as well as the rationale for performing the required activities comprises the main body of the Work Plan. This section also assigns project responsibilities and sets the project's schedule. The project deliverables associated with this Work Plan include:

- A list of key personnel and responsibilities;
- Key elements as identified in Appendix B "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," EPA 540/G-89/004,OSWER Directive 9355.3-01, October 1988;
- Contingency planning;
- A plan for coordination with EPA;
- A schedule that describes anticipated timeframe and milestones for completion of the work; and
- A Health and Safety Plan (HASP);

a1. Health and Safety Plan

An initial HASP must be prepared and submitted with the RI/FS Work Plan. The HASP will establish policies and procedures to protect investigation personnel from potential hazards posed by field activities associated with this SOW by providing: (1) measures to minimize potential exposure, accidents, and physical injuries and (2) actions to be taken during any emergencies or

force majeure events on Site. The HASP will comply with provisions of the Occupational Safety and Health Administration standard for personal safety of hazardous waste investigation personnel, as mandated by the Superfund Amendments and Reauthorization Act of 1986, 29 CFR 1910.120. The Respondents are solely responsible for ensuring the health and safety of its employees or contractors performing any of the work described in this SOW; however, due to the remote location of the Site and its proximity to public lands, the plan shall also include contingency planning such as the need to evacuate the Site due to fire activity. A revised task specific HASP must be prepared concurrently with each SAP and prior to implementation of any field activities.

b. Sampling and Analysis Plan

Each site investigation phase of work will consist of the collection of physical and chemical data to further characterize current or threatened environmental impacts and to further delineate potential sources within the site. These data will provide the basis for the development of possible response alternatives for the site and selection of a preferred alternative, as prescribed by the RI/FS process as described in EPA's RI/FS Guidance. Therefore, a SAP is required to be developed before the collection of any physical and chemical data.

Each phase specific SAP will delineate the environmental media to be investigated (e.g., surface water, ground water, soil, streamside sediments, wastewater impoundments and impoundment embankments); the specific monitoring locations within these media; the data collection methods (for example, flow measurement and sample collection techniques); the analytical parameters for each environmental medium; and the analytical methods and associated detection limits. Each phase specific SAP will also describe the sampling program including the rationale, number, type, and location of samples; the sample collection, handling and custody procedures; the required field documentation; and the required analytical methods. Each QAPP will describe the measures necessary to generate data of sufficient quality to achieve the DQOs. Each QAPP will also contain details of any special training requirements and certifications; quality control requirements for field activities; and analytical processes, data validation requirements and quality assurance /quality control measures. The Respondents shall obtain access to properties for sampling and shall ensure access for EPA and MDEQ and its authorized representatives.

Since there may be historical structures located within the boundaries of the Site, all historical structures within the footprint of the known work zone need to be evaluated in terms of the phase specific DQOs and worker's health and safety to determine the need to remove and/or retain these historical structures. The SAP should also discuss if existing roads need to be improved and/or if new temporary roads will be constructed as part of the investigation.

The SAP should also discuss contingency planning. One contingency which could affect the site investigation schedule is fire conditions in the National Forest. This could result in the need to evacuate the Site due to an active fire; the need to suspend operations due to dry conditions and fire danger; or the possibility that a contractor used by the Respondents would be needed to assist USFS in fighting a fire nearby or elsewhere. Other force majeure events could include adverse weather conditions, such as a late snowmelt or early snowfall. While the Respondents shall

implement each final SAP in accordance with the schedule described in the SAP, some allowance for short-term weather or fire events should be factored into the schedule.

All chemical analyses conducted for the Site must be implemented in accordance with appropriate EPA approved methods for analyzing arsenic and metals. The Respondents shall arrange for validated analytical data from laboratories to be reported directly to EPA in the format specified by EPA in each SAP. Data collected during implementation of each SAP will be presented in a Report of Field Sampling and Data Evaluation Activities for each phase of investigation as well as in the RI/FS reports for each OU.

Each SAP must detail how the Respondents consistently documents and records in well-maintained field logs and laboratory reports, information gathered during site characterization. The Respondents shall use field logs and photographs to document observations, measurements, and significant events that occur during field activities. The Respondent shall ensure that laboratory reports document sample custody, analytical responsibility, analytical results, adherence to prescribed protocols, nonconformity events, corrective measures, and/or data deficiencies. The Respondents shall also maintain field reports and sample shipment records. In addition, the Respondents shall establish a data security system to safeguard field logs and photos, field data sheets, laboratory reports, chain of custody forms and other project records to prevent loss, damage, or alteration of project documentation. The Respondents shall submit a written description of the data security system to EPA and MDEQ for review and EPA approval in accordance with Section X (EPA Approval of Plans and Other Submissions) of the Settlement Agreement.

c. Report of Field Sampling and Data Evaluation Activities

The Respondents shall submit a summary report for each phase of the investigation to EPA and MDEQ for review and EPA approval in accordance with Section X of the Settlement Agreement and the schedule established in the final SAP for that phase. The summary report should include maps delineating all sampling locations, tabular presentations of all data, evaluation of the data quality, test pit and/or boring logs, well construction details, and any other data collected. All analytical data will be provided to EPA in an electronic format to be agreed upon as part of the SAP so that it can be entered into EPA's SCRIBE database for permanent storage/archiving.

Analytical results developed under the SAPs shall not be included in any summary report unless accompanied by or cross-referenced to a corresponding QA/QC report. The Respondent should discuss deviations from the SAP, such as the collection of opportunistic samples, in the summary report. A more detailed description of the summary report contents will be included in each phase specific SAP. The Report of Field Sampling and Data Evaluation Activities will provide the basis for future site characterization discussions and will be presented in the RI report.

d. Baseline Human Health Risk Assessment and Ecological Risk Assessment

Following approval of the final Report of Field Sampling and Data Evaluation Activities, a draft Baseline Human Health Risk Assessment and Ecological Risk Assessment must be prepared in accordance with Section X of the Settlement Agreement and the schedule contained in Section

IV of this SOW. Respondents will perform the Baseline Human Health Risk Assessment and Ecological Risk Assessment ("Risk Assessments") as part of the RI in accordance with and applicable EPA guidance, including but not limited to: "Interim Final Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual (Part A)," (RAGS, EPA-540-1-89-002, OSWER Directive 9285.7-01A, December 1989); "Interim Final Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments)," (RAGS, EPA 540-R-97-033, OSWER Directive 9285.7-01D, January 1998); "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments" (ERAGS, EPA-540-R-97-006, OSWER Directive 9285.7-25, June 1997) or subsequently issued guidance. Also, the RI report shall provide any information relevant to Site characteristics necessary for the development and evaluation of remedial alternatives including, but not limited to, the baseline human health and ecological risk assessments.

e. **Remedial Investigation Report**

Following approval of the final Baseline Human Health Risk Assessment and Ecological Risk Assessment, a draft RI must be prepared in accordance with Section X of the Settlement Agreement and the schedule contained in Section IV of this SOW. The Respondents shall refer to Table 3-13 in EPA's RI/FS Guidance for a suggested RI report format.

Analytical results developed under the SAPs shall not be included in any RI report unless accompanied by or cross-referenced to a corresponding QA/QC report. Within the RI report, the Respondents shall analyze and evaluate the data to describe the following:

- Physical and biological characteristics;
- Contaminant source characteristics;
- Nature and extent of contamination; and
- Contaminant fate and transport.

The RI report will include the actual and potential magnitude of releases from the sources, and horizontal and vertical spread of contamination as well as mobility and persistence of contaminants and the stability of the impoundment embankments adjacent to the Clark Fork River. Where modeling is appropriate, such models shall be identified in a letter submitted to EPA, and MDEQ for review and EPA approval prior to the use of the model. All data and programming, including any proprietary programs, shall be made available to EPA and MDEQ.

f. **Remedial Action Objectives Memorandum**

The Respondents, in consultation with EPA and MDEQ, will develop a memorandum on remedial action objectives (RAOs) and a refined list of potential State and Federal ARARs based on the information provided in the final RI report and the baseline human health and ecological risk assessments. RAOs will be completed within 60 days following EPA approval of the final RI Report.

Development and Screening of Remedial Alternatives Memorandum

The Respondents shall prepare a technical memorandum summarizing the work performed in the development and screening of alternatives and the results of each task described in the technical memorandum including, but not limited to:

- A description of the general response actions and the areas or volumes of contaminated media to which they apply;
- A description of the remedial technology types and process options applicable to each general response action;
- The results of the initial screening of remedial technology types and process options;
- A description of the remedial alternatives;
- The results of the screening of alternatives based on effectiveness, implementability and cost; and
- A description of the alternatives that remain after screening and the action-specific State and Federal ARARs for each alternative.

The Respondents shall submit the technical memorandum to EPA and MDEQ for review and EPA approval in accordance with Section X of the Settlement Agreement and in accordance with the schedule contained in Section IV of this SOW.

h. Treatability Study

EPA, in consultation with MDEQ, and the Respondents, may require Respondent to perform treatability studies to provide sufficient data to allow treatment alternatives to be fully developed and evaluated during the feasibility study and/or to reduce the cost and performance uncertainties for treatment alternatives to levels sufficient to allow EPA to select a remedy in the ROD. If required, the Respondents shall refer to the "Guidance for Conducting Treatability Studies under CERCLA", EPA No. 540/R-92/071A, OSWER Directive 9355.3-01/FS, October 1992.

h1. Treatability Study Work Plan

Where EPA, in consultation with the MDEQ and the Respondents, determines that treatability studies are required, and unless the Respondents can demonstrate to EPA's satisfaction that they are not needed, the Respondents shall submit a draft treatability study work plan to EPA and MDEQ for review and EPA approval in accordance with Section X of the Settlement Agreement and the schedule contained in Section IV of this SOW. The treatability study work plan shall describe the type of treatability study to be performed (e.g., bench scale or pilot scale) and shall include:

- A discussion of background information;
- A list of key personnel and responsibilities;
- A description of the remedial technologies to be tested;
- DQOs for each test including measurements of performance;
- The experimental procedures for each test;
- A SAP that describes the samples to be collected, sample collection procedures, sampling handling and tracking procedures, DQOs, a QAPP and analytical methods;

- A data management plan;
- A health and safety plan; and
- A plan for management of waste generated during the treatability study.

h2. Treatability Study Report

Upon EPA approval of the treatability study work plan, the Respondents shall implement the work plan. Following completion of the treatability study, the Respondents shall analyze and interpret the study results in a technical report submitted to EPA and MDEQ for review and EPA approval in accordance with Section X of the Settlement Agreement and the schedule contained in the final EPA-approved treatability study work plan. In the report, the Respondents shall evaluate the effectiveness, implementability, and cost of each technology and compare test results with predicted results. The Respondents shall also evaluate full-scale application of the technology including a sensitivity analysis identifying key parameters affecting full-scale operation.

i. Detailed Analysis of Alternatives

Upon EPA approval of the Development and Screening of Alternatives Technical Memorandum described in Section III g of this SOW, the Respondents shall perform a detailed analysis of the remaining remedial alternatives. The detailed analysis shall be sufficient to allow EPA, in consultation with MDEQ, to adequately compare the alternatives; select a remedial action for each OU and/or phase within the OU; and demonstrate satisfaction of the CERCLA statutory remedy selection requirements pursuant to Section 121(b)(1)(A).

The Respondents shall assess each alternative against the following seven of the nine evaluation criteria contained in the National Contingency Plan, 40 CFR Part 300.430(e) (9) (iii):

1. Overall protection of human health and the environment
2. Compliance with ARARs
3. Long term effectiveness and permanence
4. Reduction of toxicity, mobility, and volume
5. Short-term effectiveness
6. Implementability
7. Capital and Operating and Maintenance Costs

The Respondents shall conduct the detailed analysis of alternatives by evaluating each alternative against the seven evaluation criteria above and then performing a comparative analysis between remedial alternatives. The major objective of this activity is to evaluate the relative performance of each alternative with respect to each criteria and consider the tradeoffs of each in order to select one, or a combination of several alternatives, as a comprehensive remedy. This also helps ensure that the advantages and disadvantages of each alternative are clearly understood.

j. Feasibility Study Report

The Respondents shall prepare a draft Feasibility Study (FS) report that summarizes the development and screening of remedial alternatives and the detailed analysis of alternatives. EPA will identify and select the preferred alternative, in consultation with MDEQ. The Respondents shall refer to EPA's RI/FS Guidance and "A Guide to Developing and Documenting Cost Estimates during the Feasibility Study" (EPA 540-R-D0-002, OSWER No. 9355.0-75) for an outline of the FS report and the required report content. The Respondent shall submit the draft FS report to EPA, USFS, and MDEQ for review and EPA approval, in accordance with Section X of the Settlement Agreement, and the schedule contained in Section IV of this SOW.

k. Alternatives Analysis for Institutional Controls and Screening

The Respondents shall submit a memorandum on the Institutional Controls identified in the Memorandum on Development and Screening of Alternatives as potential remedial actions. The Alternatives Analysis for Institutional Controls and Screening shall (1) state the objectives (i.e., what will be accomplished) for the Institutional Controls; (2) determine the specific types of Institutional Controls that can be used to meet the remedial action objectives; (3) investigate when the Institutional Controls need to be implemented and/or secured and how long they must be in place; (4) research, discuss and document any agreement with the proper entities (e.g., state, local government entities, local landowners, conservation organizations, Respondents) on exactly who will be responsible for securing, maintaining and enforcing the Institutional Controls. The Alternatives Analysis for Institutional Controls and Screening shall also evaluate the Institutional Controls identified in the Memorandum on Development and Screening of Alternatives against the nine evaluation criteria outlined in the NCP (40 C.F.R. 300.430(e)(9)(iii)) for CERCLA cleanups, including but not limited to costs to implement, monitor and/or enforce the Institutional Controls. The Alternatives Analysis for Institutional Controls and Screening shall be submitted as an appendix to the Draft Feasibility Study Report.

IV. SCHEDULE OF DELIVERABLES

The Respondents shall deliver documents and perform activities described in this SOW in accordance with the following schedule:

(*The number of days refers to calendar days.)

SOW Reference	Deliverable or Milestone	Schedule*
Section II c	Conduct Field Visit	Not later than 30 days after Effective Date of Settlement Agreement
Section II d	Notification of Field Visit	14 days prior to field visit
Section III a	Draft RI/FS Work Plan	30 days after receiving project summary document from EPA
	Final RI/FS Work Plan	14 days following receipt of EPA's comments on Draft RI/FS Work Plan
Section III a 1	Health and Safety Plan	Concurrently with RI/FS Work Plan
Section III b	Draft Sampling and Analysis Plan	30 days after receiving EPA's approval of the RI/FS Work Plan
	Final Sampling and Analysis Plan	14 days following receipt of EPA's comments on Draft SAP
Section III a 1 Section III b	Draft Phase Specific SAPs with updated HASPs	90 days prior to anticipated start of field work
	Final Phase Specific SAPs	30 days following receipt of EPA's comments on Draft SAP
Section III c	Draft Report on Field Sampling and Data Evaluation Activities for each phase of sampling	Date specified in EPA-approved final SAP for each phase
	Final Report on Field Sampling and Data Evaluation Activities for each phase of sampling	Date specified in EPA-approved final SAP for each phase
Section III d[1]	Draft Baseline Human Health Risk Assessment and Ecological Risk Assessment	90 days following approval of the Final Report on Field Sampling and Data Evaluation Activities
	Final Baseline Human Health Risk Assessment and Ecological Risk Assessment	45 days following receipt of EPA's comments on Draft Report
Section III e	Draft Remedial Investigation Report	90 days following approval of the Final Human Health Risk Assessment and Ecological Risk Assessment
	Final Remedial Investigation Report	45 days following receipt of EPA's comments on Draft Report

[1] These can be combined or separate documents

Section III f	Draft Remedial Action Objectives Memorandum	60 days following approval of the Final Remedial Investigation Report
	Final Remedial Action Objectives Memorandum	14 days following receipt of EPA's comments Draft Remedial Action Objectives
Section III g	Draft Development and Screening of Alternatives Technical Memorandum	60 days following approval of the Remedial Action Objectives Memorandum
	Final Development and Screening of Alternatives Technical Memorandum	30 days following receipt of EPA's comments on the Draft Development and Screening of Alternatives Technical Memorandum
Section III h 1	Draft Treatability Studies Work Plan	30 days after receiving notice from EPA that treatability studies are required
	Final Treatability Studies Work Plan	30 days following receipt of EPA's comments on the Treatability Studies Work Plan
Section III h 2	Draft Treatability Studies Technical Report	Date specified in EPA-approved final Treatability Studies Work Plan
	Final Treatability Studies Technical Report	Date specified in EPA-approved final Treatability Studies Work Plan
Section III i	Draft Detailed Analysis of Alternatives	60 days following approval of the Final Development and Screening of Alternatives Technical Memorandum
	Final Detailed Analysis of Alternatives	14 days following receipt of EPA's comments Draft Detailed Analysis of Alternatives
Section III i	Draft Feasibility Study Report	60 days after EPA approval of final Analysis of Alternatives or final Treatability Studies Technical Report, whichever is later
	Final Feasibility Study Report	30 days after receiving EPA's comments on draft FS report
Section III i 1	Draft Alternatives Analysis for Institutional Controls and Screening	As an appendix to the Feasibility Study Report
	Draft Alternatives Analysis for Institutional Controls and Screening	30 days after receiving EPA's comments on draft FS report

V. REFERENCES

United States Environmental Protection Agency. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, fifth edition (EPA-821-R-02-012). October 2002.

United States Environmental Protection Agency. Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates, 2nd Edition (EPA/600/R-99/064). March 2000.

ATTACHMENT 1
List of Guidance Documents

Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA. EPA 540/G-89/004, OSWER Directive 9355.3-01

Guidance for Conducting Treatability Studies under CERCLA. EPA No. 540/R-92/071A, OSWER Directive 9355.3-01/FS.

A Guide to Developing and Documenting Cost Estimates during the Feasibility Study. EPA 540-R-D0-002, OSWER No. 9355.0-75

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